

REMARKS/ARGUMENTS

Drawings:

The drawings were objected to as failing to comply with 37 C.F.R. 1.84(p)(5) for failing to include several reference numerals mentioned in the description. The replacement drawing sheet (Fig. 2) enclosed herewith has been amended to add previously omitted reference numerals 41, 43, 45, 47, 49, 51, 53, 55, 61 and 72. Reference numerals 57 and 70 have been deleted from the description, and therefore have not been added. Reference numeral 30, contrary to the indication of the Examiner, was in fact previously present in Fig. 2. Reconsideration of the rejection to the drawings under 37 C.F.R. 1.84(p)(5) is therefore respectfully requested, in view of the replacement drawing sheet enclosed herewith.

A formal version of Fig. 1 is also enclosed herewith to replace the informal Fig. 1 previously on file. No changes have been made.

Claim Rejections – 35 U.S.C. § 112:

Claims 14-19 were rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to meet the enablement requirement. Particularly, the expression “each of said shafts being respectively rotatably supported by at least two outer shaft bearings and two inner shaft bearings” as found in lines 3-6 of claim 14 was identified as lacking support in the specification.

The Examiner's rejection is noted, though the issue is clearly not one of claims lacking support but rather of imprecise wording in the claim. Claim 14 as presently submitted has been corrected accordingly. Reconsideration of the rejection of claims 14-19 is therefore respectfully requested.

Claims 1-20 were also rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the written description requirement. Particularly, the Office Action indicates that the specification omits reference numerals found in the drawings, and that the disclosure thus fails to comply with the adequate written description requirement.

The basis of the Examiner's rejection is not sound. The omitted items include shafts, gears and bearings, which a skilled reader would easily locate in the drawings, with or without reference numerals. Therefore, regardless of the number of elements unnumbered in the figures, since these elements are clearly depicted in the figures, and easily recognizable by the skilled reader, the specification (which includes the drawings) meets the requirements of 35 U.S.C. 112, first paragraph. The Examiner has already made his point with respect to the Drawings, above, however the rejection of the claims on the same basis is without support. It is therefore respectfully requested that the rejection of claims 1-20 under 35 U.S.C. 112, first paragraph, be withdrawn.

Claim Rejections – 35 U.S.C. § 102:

Independent claims 14 and 20 were rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Hibner et al (US Patent 5,110,257). With respect, the Applicant believes that Hibner et al fails to teach or suggest the subject matter of the present invention as claimed. Particularly, Hibner teaches an outer shaft 40 and an inner shaft 34 which are concentric and wherein at least the outer shaft has a compressor portion 36 and a turbine portion 24 mounted thereto. Each of the outer and inner shafts 40 and 34 are supported by a pair of bearings. As depicted in Fig. 1, the outer shaft 40 is supported by a roller bearing 46 at a forwardmost end thereof and by a rear roller bearing 46 which is disposed between the compressor 36 and the turbine 24 mounted on the outer shaft 40. Accordingly, independent claims 14 and 20 as presently submitted are believed to be novel over the gas turbine engine structure taught by Hibner et al. Reconsideration of their rejection under 35 U.S.C. 102(b) is therefore respectfully requested.

Claims 14 and 20 were further rejected under 35 U.S.C. 102 (b) as being allegedly anticipated by Ainsworth (US Patent 3,830,058). Ainsworth teaches a gas turbine engine which has outer and inner concentric shafts, the outer shaft having a compressor section 36 and a turbine section 54 mounted thereto, and wherein the outer shaft is supported by two bearings, namely a bearing 42 at a forward end of the outer shaft and a bearing 40 at its aft end. The aft bearing 40 supporting the outer shaft is described and depicted (see Fig. 1, for example) as being located between the compressor 36 and the turbine 54 mounted on the outer shaft and is therefore disposed rearward of the compressor 36 mounted thereon. Accordingly, claims 14 and 20 as presently submitted are believed to be novel over Ainsworth, and thus reconsideration of their rejection under 35 U.S.C. 102 (b) is respectfully requested.

Claim Rejections – 35 U.S.C. § 103:

Claims 14-17 and 20 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Hiscock et al (US Patent 2,978,869) in view of Leibach (US Patent 2,924,937) and Hibner et al. Specifically, the Office Action alleges that Hiscock et al teaches a gas turbine engine having inner and outer concentric shafts, at least the outer concentric shaft having a compressor 23 and a turbine 25 mounted thereon. The Office Action indicates that Hiscock et al however fails to teach that the outer shaft bearings are spaced apart from a turbine end of the outer shaft such that the turbine is disposed between these bearings and said turbine end of the shaft such that the outer concentric shaft is cantilevered. Leibach teaches a single shaft gas turbine engine having centrifugal compressor and turbine stages mounted back to back at a remote end thereof, the single shaft 2 being mounted in a pair of ball bearings 1. It is therefore alleged that it would have been obvious to employ the bearing

arrangement taught by Leibach in the engine configuration taught by Hiscock et al, in further view of Hibner et al teaching bearings to support the engine shafts.

With respect, the Examiner's allegation of motivation is not sound and does not satisfy what is required to maintain a proper finding of prima facie obviousness. Particularly, the mere fact that references can be combined or modified does not render their resultant combination obvious unless the prior art also suggests the desirability of the combination. (*In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)).

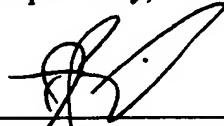
That is, it must be demonstrated that a skilled person reading Hiscock (directed to engine accessory mounting arrangements) would immediately see the benefit of incorporating - and know how to incorporate - the teachings of Leibach (directed to combustion improvements and disc material improvements in automotive turbochargers) and Hibner (directed reduced vibration bearing mounts). The three references are diverse in their subject matter within the gas turbine field and, with respect, seem linked only by their usefulness in a hindsight reconstruction of the present invention.

Hiscock is apparently unconcerned with bearing vibration, combustion or disc material issues - i.e. there is no motivation to look to Leibach or Hibner for ways to improve. The Office Action contains no additional motivation, other than the assertion that it would be "obvious to do so" based on motivations not found in the prior art (e.g. reducing bearing cavities, isolation from heat, etc.), but rather only in the present specification.

A rejection under §103 must include prior art basis/reasoning justifying the alleged combination - to rely on present teachings to justify a prior art combination is insufficient. The Applicant contends that sufficient basis to justify the combination in accordance with the requirements of the MPEP have not been given. Withdrawal of the rejection of claims 14-17 and 20 under 35 U.S.C. 103(a) is therefore sought.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully,



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Date

Amendments to the Drawings:

The replacement sheet 1/2 including Fig. 1 is enclosed herewith to substitute informal Fig. 1 previously on file. No changes have been made.

The replacement sheet 2/2, which includes only Fig. 2, replaces the corresponding original sheet including Fig. 2. In the replacement Fig. 2, previously omitted reference numerals 41, 43, 45, 47, 49, 51, 53, 55, 61 and 72 have been added. The annotated drawing sheet enclosed shows the changes to Fig. 2.

Attachment: Replacement Sheets (Fig. 1 & Fig. 2)
 Annotated Sheet (Fig. 2) Showing Changes

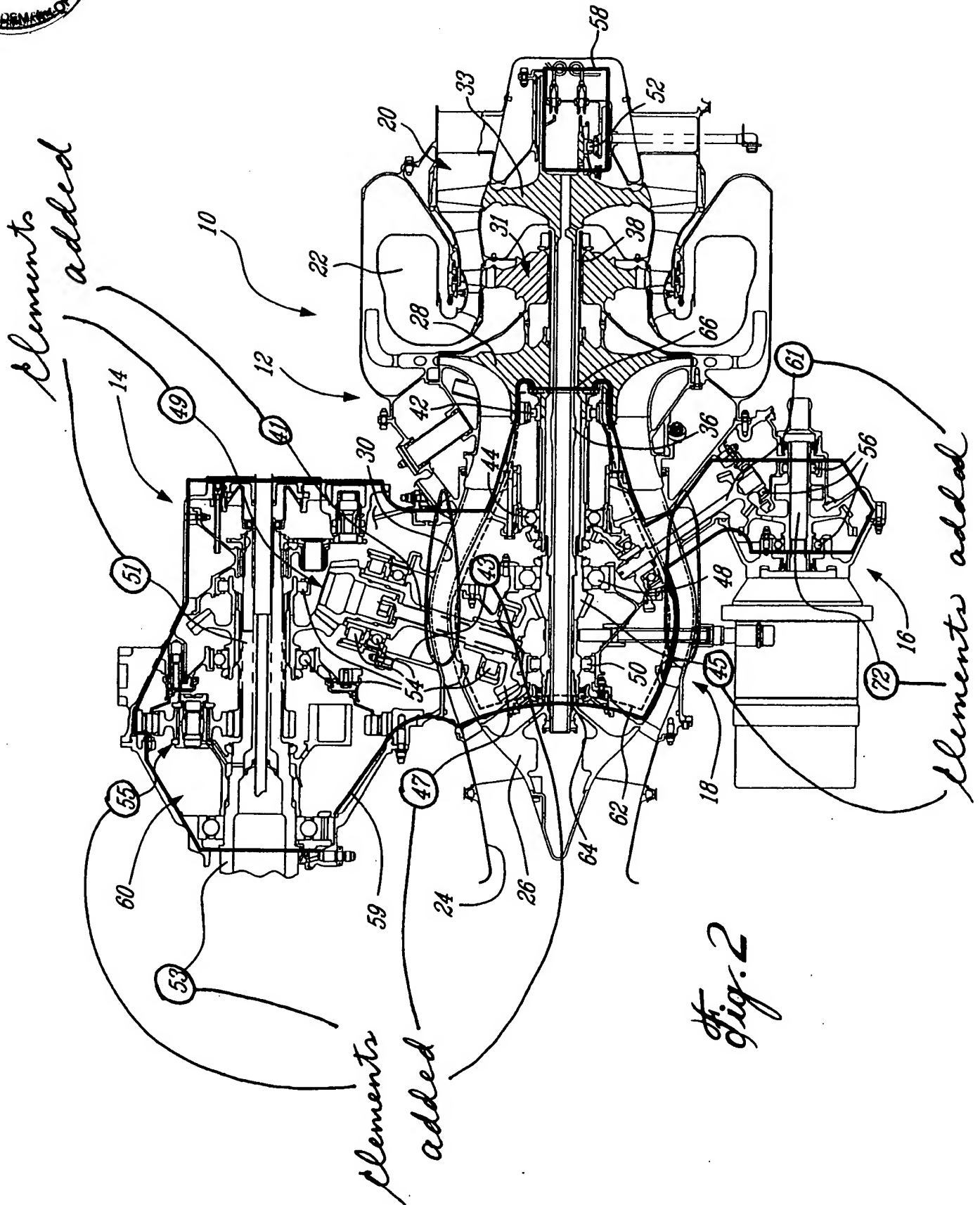


Fig. 2